ENVIRONMENTAL ASSESSMENT
T-25 OUTFALL UPGRADE AND NEW OIL/WATER SEPARATOR

SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS

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Prepared for:

Soldier Systems Center
Natick, Massachusetts

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Project No. 3618038004-01

September 2003

This document complies with the policies and procedures outlined in Department of the Army Regulation 32 CFR Part 651 "Environmental Analysis of Army Actions; Final Rule, Federal Register: March 29, 2002".

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SEP 19 2003

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Deputy to the Commander for
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FINDING OF NO SIGNIFICANT IMPACT

T-25 OUTFALL UPGRADE AND NEW OIL/WATER SEPARATOR ENVIRONMENTAL ASSESSMENT

PROPOSED ACTION: The proposed action of this Environmental Assessment is to upgrade the existing storm water drainage system at the North Campus of the U.S. Army Soldier Systems Center in Natick, Massachusetts. The upgrade includes installation of new catch basins, replacement of subsurface storm drain piping, and a new oil/water separator to treat collected storm water prior to discharge to Lake Cochituate via the outfall piping. Three options for the upgrade are being considered. Expansion of the storm drain system across the center of the Campus and a new oil/water separator are elements of the upgrade common to each option. The Base Bid features a 36-inch diameter outfall pipe constructed in a deep trench using temporary and permanent structural sheet pile to support the trench sidewalls. Alternative 1 includes construction of a new storm water pumping station, sited to pump drainage from the new oil/water separator discharge to the lake. This alternative features a 16-inch diameter force main installed at a shallow depth instead of the Base Bid's deeper 36-inch diameter outfall pipe. Alternative 2 includes the use of pipe jacking and/or micro-tunneling to install the 36-inch diameter outfall. Under a fourth option, the No Action alternative, no upgrade to the existing storm water drainage system would occur. The No Action alternative is not desirable because storm water drainage problems at the North Campus would not be resolved.

ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES: Significant adverse effects to human health and the environment are unlikely to result from implementing the proposed action. The outfall upgrade will enhance collection of storm water runoff from vehicle parking areas at the North Campus. The parking areas will drain more quickly, with a reduction in puddled water and subsequent icing, both of which present safety hazards to pedestrians and motorists. The new oil/water separator upgrade will aid in preventing sediment and pollutants such as oils, salt, and litter from entering the lake, and thus will protect aquatic wildlife, maintain aesthetic value, and protect public health by preventing contamination of the lake.

FACTORS CONSIDERED IN THE FINDING OF NO SIGNIFICANT IMPACT: The Environmental Assessment analyzed the proposed action and associated impacts to area resources. The resources evaluated during the Environmental Assessment include land use, infrastructure (traffic and utilities), socioeconomics, public services, hazardous materials, noise, air quality and climate, geology and soils, water resources, biological resources, and cultural resources.

CONCLUSION: The Environmental Assessment concluded that construction of the proposed T-25 outfall upgrade and new oil/water separator will not result in significant impacts to the environment.

John J. Manning

Mr. John J. Manning
Deputy to the Commander for
Installation Management

22 Sept 03

Date

ENVIRONMENTAL ASSESSMENT

T-25 OUTFALL UPGRADE AND NEW OIL/WATER SEPARATOR

SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

This Environmental Assessment (EA) has been prepared for the design alternatives being considered for storm drainage improvements at the U.S. Army Soldier Systems Center (SSC) in Natick, Massachusetts. The proposed action and subject of the EA is the upgrade to the existing storm water drainage system at the North Campus of the SSC. The upgrade is needed to enhance collection of storm water runoff from vehicle parking areas at the North Campus. The parking areas will drain more quickly, with a reduction in puddled water and subsequent icing, both of which present safety hazards to pedestrians and motorists. The upgrade includes installation of new catch basins, replacement of subsurface storm drain piping, and a new oil/water separator to treat collected storm water prior to discharge to Lake Cochituate via the outfall piping. The upgrade will aid in preventing sediment and pollutants such as oils, salt, and litter from entering the lake, and thus will protect aquatic wildlife, maintain aesthetic value, and protect public health by preventing contamination of the lake.

Contacted Individuals. The following persons were consulted for information during preparation of this EA:

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  and

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2.0 SITE DESCRIPTION AND PROPOSED ACTION

Site Description. SSC Natick is located approximately 17 miles west-southwest of Boston in the town of Natick, Massachusetts. This research facility, which occupies a small peninsula extending from the eastern shoreline of Lake Cochituate, encompasses approximately 74 acres. The land use surrounding SSC along the eastern banks of Lake Cochituate includes residential, commercial/retail, and light industrial.

The rectangular-shaped North Campus, located at SSC's northernmost end adjacent to the South Pond of Lake Cochituate, is approximately 11 acres in size. The campus consists of several warehouse and material storage buildings, a laboratory, communications building, recreational fields, and non-commissioned officers' mess hall. Much of the area between the buildings is paved. The paved area serves as a parking lot, and also functions as a traveled way for motorists.

The southeastern quadrant of the Campus is served by an existing storm drain system comprised of open ditches, subsurface piping, and an oil/water separator. The downstream portion of the existing system is a 15-inch diameter subsurface pipe that discharges into the lake. The 15-inch outfall pipe occupies a narrow corridor between Building 14 and the SSC property line (reservation boundary). The corridor is approximately fifteen feet wide. The abutting property use at this location is residential.

Proposed Action. The proposed action would expand the storm drain system into an area across the center of the Campus (see Figure 1). New catch basins, subsurface storm drain piping, and a new oil/water separator would extend the reach of the existing system and enhance surface water collection, treatment, and transport to the lake. The route of the proposed outfall piping in the Campus' southwestern quadrant will follow the location of the existing piping. The existing 15-inch pipe in this area will be removed and replaced with new, larger-diameter piping.

Existing Permit Activities. Currently, SSC Natick complies with conditions of an existing National Pollutant Discharge Elimination System (NPDES) permit. This permit addresses discharge of non-contact cooling water generated from facility operations. There are no associated notification requirements with the Massachusetts Department of Environmental Protection or with the U.S. Environmental Protection Agency's (USEPA) NPDES offices as a result of the proposed T-25 outfall upgrade.

SSC Natick will be filing a Notice of Intent (NOI) with regard to the Final Phase II NPDES permit. USEPA Region I has authority for this permit, which will govern storm water discharge from small municipal separated storm sewer systems in Massachusetts. The NOI is scheduled to be filed by July 30, 2003. The proposed T-25 outfall upgrade is consistent with Best Management Practices (BMPs) as described in the facility's Storm Water Management Plan and outlined in the General Permit. Erosion control measures to be incorporated during the outfall construction comply with the General Permit and the facility's Storm Water Management Plan.

3.0 ALTERNATIVES CONSIDERED

The proposed action and subject of this EA is the upgrade to the existing storm water drainage system at the North Campus of the SSC. Three options for the upgrade are being considered. Expansion of the storm drain system across the center of the Campus and a new oil/water separator are elements of the upgrade common to each option. The options differ in the approach to the design and construction of the proposed outfall piping in the Campus' southwestern quadrant. The outfall piping is referred to as the Base Bid on the engineering design drawings (Dewberry-Goodkind, 2002). The Base Bid features a 36-inch diameter outfall pipe constructed in a deep trench using temporary and permanent structural sheet pile to support the trench sidewalls.

Two alternatives to the Base Bid are described in the design alternatives evaluation report (Dewberry-Goodkind, 2003). Alternative 1 includes construction of a new storm water pumping station, sited to pump drainage from the new oil/water separator discharge to the lake. This alternative features a 16-inch diameter force main installed at a shallow depth instead of the Base Bid's deeper 36-inch diameter outfall pipe. Alternative 2 includes the use of pipe jacking and/or micro-tunneling to install the 36-inch diameter outfall. Under a fourth option, the No Action alternative, no upgrade to the existing storm water drainage system would occur. The No Action alternative is not desirable because storm water drainage problems at the North Campus would not be resolved. The No Action alternative is presented in this EA as the baseline condition for the purpose of comparison with the three upgrade options. Environmental impacts associated with each of the three upgrade options and the No Action alternative are discussed in Section 4.0 of this EA. The following subsections describe the three upgrade options in more detail.

3.1 BASE BID OPTION

The Base Bid option for the outfall includes a 36-inch diameter reinforced concrete pipe (RCP) buried at a depth of over twenty feet below ground surface (bgs) in the narrow corridor between Building 14 and the SSC reservation boundary (see Figure 2). To avoid disturbance to the Building 14 foundation and to prevent intrusion onto the abutting property while digging the pipe trench, approximately 11,500 square feet (sf) of temporary and permanent structural sheeting would be installed at the trench. Upon completion of the Base Bid option, storm water would flow by gravity via the 36-inch diameter RCP outfall to the lake.

3.2 ALTERNATIVE 1

Alternative 1 to the Base Bid features a 16-inch diameter ductile iron force main installed at a depth shallower than that of the 36-inch diameter RCP in the Base Bid (see Figure 3). The depth of the force main would be less than ten feet bgs in the narrow corridor between Building 14 and the SSC reservation boundary. Because of the shallow force main depth, the total amount of temporary and permanent structural sheeting for this alternative would be reduced from the Base Bid's 11,500 sf to approximately 8,100 sf. A subsurface pump station contained within a concrete vault would be installed adjacent to Building 14. During precipitation events, collected storm water would be pumped via the force main to a 24-inch diameter RCP outfall that would convey storm water by gravity to the lake.

The pump station would be electrically-driven, using an onsite power source. In the event of a power outage, Alternative 1 includes an aboveground 250 kilowatt emergency generator powered by a diesel engine.

3.3 ALTERNATIVE 2

Alternative 2 to the Base Bid includes trenchless technologies (i.e., pipe jacking and micro-tunneling) as an option to conventional open-cut excavation for the 36-inch RCP outfall installation (see Figure 4). Two contiguous sections of the outfall drain are being considered for installation using pipe jacking. The first section is approximately 100 feet in length, located along the narrow corridor between Building 14 and the SSC reservation boundary. Excavation and construction of a jacking pit on one end of the 100-foot outfall section would be required; the dimensions of the jacking pit are approximately 15 feet wide by 25 feet long. Similarly, a receiving pit on the other end of the outfall section would be excavated and constructed; the dimensions of the receiving pit are approximately 15 feet wide by 15 long. Both pits would be approximately 25 feet deep.

The second section of 36-inch RCP outfall to be pipe-jacked, located between the lake and the first upstream manhole, is approximately 150 feet in length. The jacking pit constructed for the first outfall section would be used again for the second outfall section.

Because this alternative precludes the open excavations of the Base Bid, the total amount of temporary and permanent structural sheeting for this alternative would be reduced from the Base Bid's 11,500 sf to approximately 6,000 sf.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section discusses the existing environment in the vicinity of the T-25 outfall upgrade, where potential environmental effects may be experienced during construction. Existing conditions for each resource category are provided as a baseline for evaluating potential impacts resulting from the proposed construction. Resources evaluated include land use, infrastructure (traffic and utilities), socioeconomics, public services, noise, air quality and climate, geology and soils, water

resources, biological resources, and cultural resources. Under the No Action alternative, existing conditions for all resource categories would remain unchanged.

Land use. The North Campus consists of several warehouse and material storage buildings, a laboratory, communications building, recreational fields, and non-commissioned officers' mess hall. Much of the area between the buildings is paved. The paved area serves as a parking lot, and also functions as a traveled way for motorists. An area of private residences exists between the campus and the lake.

It is anticipated that the day-to-day business conducted at the campus will continue into the foreseeable future. Additionally, there are no current plans to change land use in the nearby residential area. Therefore, no change in land use is expected as a result of construction of any of the three outfall upgrade options and the new oil/water separator.

Infrastructure. Construction equipment and materials will be transported to the campus on local roads. The temporary increase in the volume of traffic will not overtax the capacity of the existing roads under any of the three outfall upgrade options.

Construction activities are not anticipated to affect electric, water, sewer, telephone, or natural gas service in the area, with one exception. Construction of the pump station (Alternative 1) involves connecting the pump station to the existing electrical substation at the North Campus. During the connection, electrical service to businesses on the campus may be temporarily interrupted. However, the interruption would likely be scheduled during time of low service demand such as evenings or weekends.

Any temporary disruption in electric service would be minimized, and the utility would be restored as soon as possible. The options being considered for proposed construction of the outfall upgrade and the new oil/water separator are not anticipated to have any significant adverse effects to the existing infrastructure (i.e., transportation and utilities).

Socioeconomics. The proposed activities include construction of the storm water outfall upgrade and the new oil/water separator, and site restoration. The North Campus will continue to be the site of current day-to-day activities following completion of the proposed construction. Therefore, the options being considered for proposed construction of the outfall upgrade and the new oil/water separator would not result in changes to the local population, number of available jobs or unemployment rate, income generation, or local housing market.

Public services. With the exception of transportation of equipment and materials from off-site, the options being considered for construction of the outfall upgrade and the new oil/water separator would be conducted entirely on the SSC facility. Additionally, the campus will continue to be the site of current day-to-day activities following completion of the proposed construction. Therefore, the proposed construction activities associated with the outfall upgrade options and the new oil/water separator would not result in the need for, or elimination of, public services, such as fire protection, law enforcement, medical services, or schools.

Noise. The proposed construction activities associated with the outfall upgrade options will require the use of standard construction equipment (e.g., trucks, excavators, dewatering pumps, pipe jacking rams) that will operate during normal business hours. With the exception of truck traffic for transportation of construction materials and equipment, the proposed activities will be conducted on-site.

Each of the three outfall construction options contains individual activities expected to generate similar noise levels over the course of the project. Based upon the estimated quantities of materials to be constructed (Dewberry-Goodkind, 2003), cumulative noise levels associated with construction activities appear to be roughly the same for each of the three options. The Base Bid option (open excavation) and Alternative 2 (pipe jacking) do not have associated post-construction noise concerns. Post-construction operation and maintenance activities associated with Alternative 1 (storm water pumping) involve noise levels that may be of concern to workers at the North Campus and to nearby residents.

Outfall construction activities expected to cause the most prominent noise levels would be generated from equipment used for sheet pile installation, open-cut soil excavations, dewatering, storm water by-pass pumping, and pipe jacking. The highest anticipated level of noise from sheet pile installation (including temporary sheet pile removal) is associated with the Base Bid. Noise levels from soil excavation equipment is anticipated to be highest for the Base Bid option because the largest estimated amount of soil excavation (i.e., 3,000 cubic yards [cy]) is associated with the Base Bid. Alternative 1 would involve an estimated 900 cy of soil excavation, and Alternative 2 would involve an estimated 1,300 cy.

Noise generated from dewatering pumps is anticipated to be of a duration nearly twice as long for each of the Alternatives 1and 2, compared to the Base Bid; this is due to the depths required for installation of the storm water pump station in Alternative 1, and for the pipe jacking pits in Alternative 2. Level and duration of noise from storm water by-pass pumping is expected to be similar for each of the three options. Noise from the hydraulic ram used for pipe jacking is associated only with Alternative 2. Post-construction noise associated with the periodic start-up and shut-down of the storm water pump station is associated only with Alternative 1.

Air quality and climate. Standard construction equipment will be used to conduct the proposed construction for each of the three outfall options. Each of the three outfall construction options involve movement of soil materials that have potential to become wind-blown during drier periods of weather. Standard dust suppression techniques such as water spraying would be implemented to minimize soil dust and its migration. Therefore, proposed construction activities involved with each of the three outfall upgrade options and the new oil/water separator are not anticipated to produce air pollutant emissions that will result in adverse effects to local air quality.

Geology and soils. The options being considered for the proposed outfall upgrade and new oil/water separator construction activities include excavation of trenches and pits in native soil at depths of up to 25 feet bgs. Provisions for erosion control measures for each of the options have been included on the engineering design drawings (Dewberry-Goodkind, 2002).

After placement of the outfall piping and associated structures within the excavated trenches and pits, the excavations will be backfilled with native soils and with engineered soil materials from an off-site borrow source. The excavated areas will be restored by placing topsoil, seed, and mulch, and by pavement replacement. Therefore, it is not anticipated that the proposed construction activities associated with the outfall upgrade options and new oil/water separator will cause flooding or erosion, expose people to geologic hazards, cause slope or foundation instability, or cause a loss of mineral resources.

Water resources. The U.S. Army is responsible for preparing plans and procedures for conducting the construction activities (e.g., excavation and dewatering procedures and erosion control measures) for the options being considered for the outfall upgrade and new oil/water separator. The proposed area of construction is within 100 feet from the shoreline of the South Pond of Lake Cochituate. Sediment runoff to the lake will be controlled through the use of hay bales, silt fences, siltation fabric curtains, and sorbent booms placed in appropriate locations. At no time will construction equipment or materials come into direct contact with the lake or with lake sediment. A Notice of Intent will be filed with the Natick Conservation Commission, and work will not proceed until an Order of Conditions has been issued.

Each of the three outfall options includes a new oil/water separator to augment current treatment of surface runoff provided by the existing oil/water separator. The oil/water separator will aid in preventing sediment and pollutants such as oils, salt, and litter from entering the lake, and therefore will protect aquatic wildlife, maintain aesthetic value, and protect public health by preventing contamination of the lake. The proposed construction activities for each of the three outfall options are not anticipated to adversely affect water resources. The activities will not degrade water quality, degrade or deplete groundwater supply, cause flooding, or change surface water runoff characteristics.

Outfall Alternative 1 (storm water pumping) includes the placement of a permanent above-ground diesel tank to fuel the emergency generator in the event of a power outage. The tank will be constructed according to the latest safety regulations, with inspections as required. There is potential, however remote, for future fuel leakage that could cause possible adverse impacts to water resources.

Biological resources. The options being considered for construction of the proposed outfall upgrade and new oil/water separator include excavation of soil trenches and pits in native soil to depths of up to 25 feet. After placement of the outfall piping and associated structures within the excavated trenches and pits, the excavations will be backfilled with native soils and with engineered soil materials from an off-site borrow source. The excavated areas will be restored by placing topsoil, seed, and mulch, and by pavement replacement.

Any adverse effects to ecological receptors are expected to be minimal and short-term (i.e., the site will be restored to existing conditions at the completion of the outfall construction activities). Additionally, there are no known rare or endangered species present in the vicinity of the North Campus. Therefore, it is anticipated that the proposed construction activities for each of the three outfall options will not cause: (1) adverse effects to wetlands, rare or endangered species or

habitat, or movement of resident or migratory fish or wildlife species; or (2) reduction or removal of a significant portion of a biological resource.

Cultural resources. There are no documented archeological, historical, or architectural sites, or cultural resources associated with the North Campus. Therefore, the options being considered for construction of the outfall upgrade and new oil/water separator would not adversely affect cultural resources.

5.0 CONCLUSIONS

The proposed storm water outfall upgrade will improve drainage of puddled storm water from the traveled way of the North Campus area at the SSC, and provide its efficient discharge to the South Pond of Lake Cochituate. Vehicle driver and pedestrian safety will be enhanced. The oil/water separator will aid in preventing sediment and pollutants such as oils, salt, and litter from entering the lake, and thus will protect aquatic wildlife, maintain aesthetic value, and protect public health by preventing contamination of the lake.

The principal conclusions of this EA are:

- no significant environmental impacts associated with the outfall upgrade project have been identified; a Finding of No Significant Impact has been published – no concerns regarding the outfall upgrade project were raised during the public comment period.
- implementation of any of the three outfall upgrade options will not result in significant adverse environmental or human health impacts,
- relatively similar durations of noise-inducing construction activities would be expected for each of the three options, and
- after completion of construction, outfall Alternative 1 (storm water pumping) is the only one of the options that would generate mechanical noise during its operation.

Alternative 1 also includes the placement of a permanent above-ground diesel tank to fuel the emergency generator in the event of a power outage. The tank will be constructed according to the latest safety regulations, with inspections as required. There is potential, however remote, for future fuel leakage that could cause possible adverse impacts to water resources. Because of post-construction noise concerns and the requirement for on-site storage of diesel fuel, Alternative 1 is not recommended for implementation.

To compare relative anticipated noise levels for the Base Bid and Alternative 2 options, estimated durations of selected construction activities are summarized in Table 1. The summary illustrates that similar durations of noise-inducing construction activities would be expected for the Base Bid and for Alternative 2.

LIST OF ACRONYMS

bgs	below ground surface
BMP	best management practice
cy	cubic yard
EA	Environmental Assessment
lf	linear feet
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
RCP	reinforced concrete pipe
sf	square feet
SSC	U.S. Army Soldier Systems Center
USEPA	U.S. Environmental Protection Agency

REFERENCES

Dewberry-Goodkind, 2003. "Storm Water Design Alternatives Evaluation Report, North Campus Drainage and Steam Pit Removal, U.S. Army Soldier Systems Center, Natick, Massachusetts", Task Order No. 5, Contract No. DACA51-99-D-0001. Prepared for U.S. Department of the Army, Corps of Engineers, New England District, 696 Virginia Road, Concord, MA. Prepared by Dewberry-Goodkind, Inc., 31 St. James Avenue, Boston, MA. April 2003.

Dewberry-Goodkind, 2002. Design Drawings for the North Campus Drainage and Steam Pit Removal, U.S. Army Soldier Systems Center, Natick, Massachusetts; 90% Submission. Prepared for U.S. Department of the Army, Corps of Engineers, New England District, 696 Virginia Road, Concord, MA. Prepared by Dewberry-Goodkind, Inc., 31 St. James Avenue, Boston, MA. July 19, 2002.

TABLES

Table 1
Estimated Duration of Selected Construction Activities

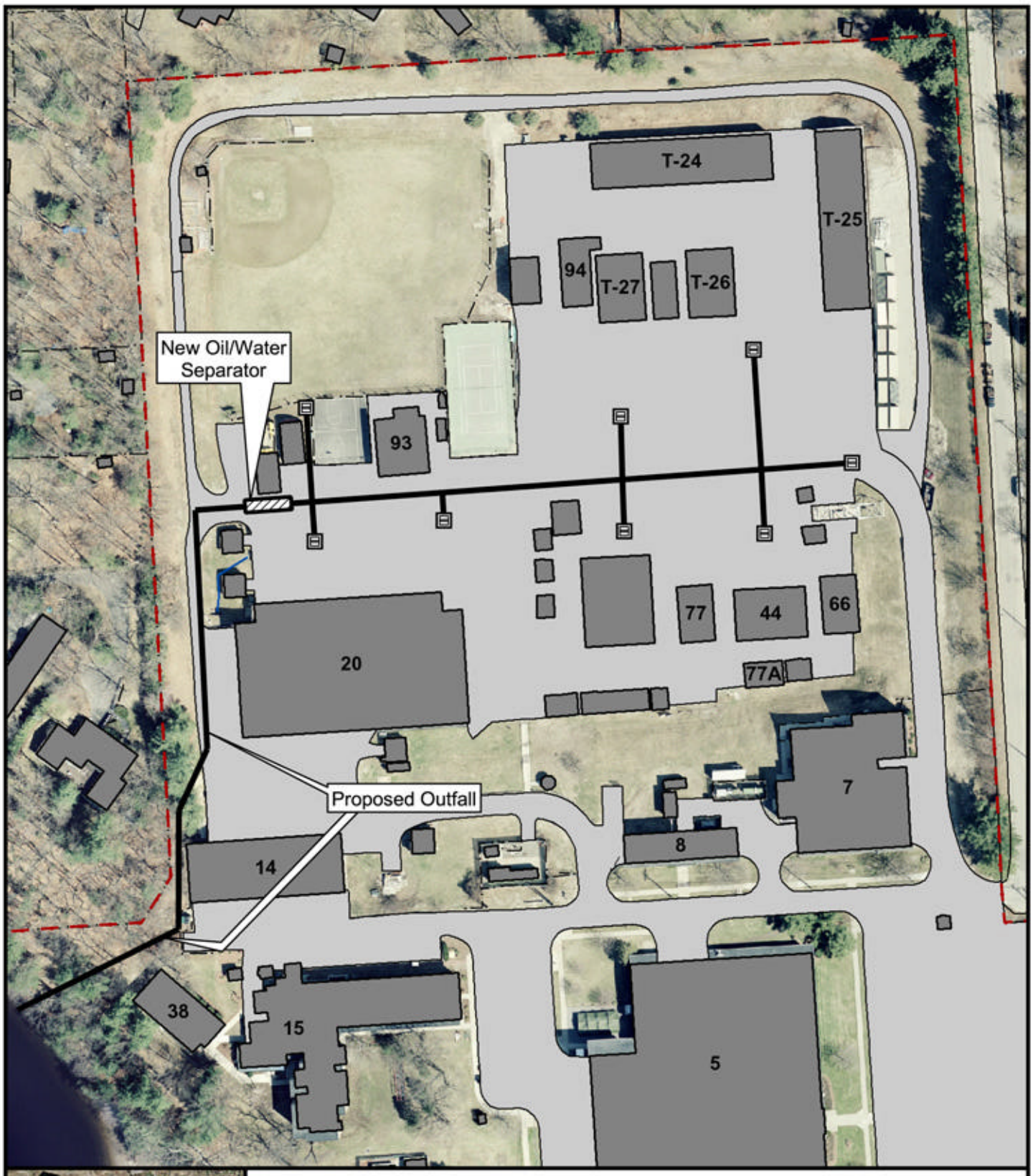
Environmental Assessment
T-25 Outfall Upgrade and New Oil/Water Separator

Construction Activity	Estimated Duration Base Bid – Open Excavation	Estimated Duration Alternative 2 - Pipejacking
Soil excavation/backfill/compaction	32 days [1]	14 days [2]
Install/remove temporary sheeting	7 days [3]	10 days [4]
Install sheeting left in-place	10 days [5]	Not included
Pipejacking – hydraulic ram	Not included	18 days [6]
Dewatering pumps	10 days	17 days
Storm water by-pass pumping	Continuous activity during construction (duration is comparable to Alternative 2)	Continuous activity during construction (duration is comparable to Base Bid)

Notes:

1. Estimated total quantity = 3,000 cubic yards (cy). Estimated daily production rates: excavation 1,040 cy/day; backfill 400 cy/day; compaction 140 cy/day.
2. Estimated total quantity = 1,300 cubic yards (cy). Estimated daily production rates: excavation 1,040 cy/day; backfill 400 cy/day; compaction 140 cy/day.
3. Estimated total quantity = 4,000 square feet (sf). Estimated daily production rate = 600 sf/day.
4. Estimated total quantity = 6,000 square feet (sf). Estimated daily production rate = 600 sf/day.
5. Estimated total quantity = 9,500 square feet (sf). Estimated daily production rate = 1,000 sf/day.
6. Estimated total quantity = 250 linear feet (lf). Estimated daily production rate = 14 lf/day.

FIGURES



Legend

- Installation Boundary
- Buildings
- Roads/Parking
- Proposed Catch Basin

N

0 125 Feet

Prepared by BRP | Checked by MJS

Figure 1

Environmental Assessment
T-25 Outfall Upgrade and New Oil/Water Separator
Soldier Systems Center
Natick, Massachusetts

Harding ESE
A MACTEC Company

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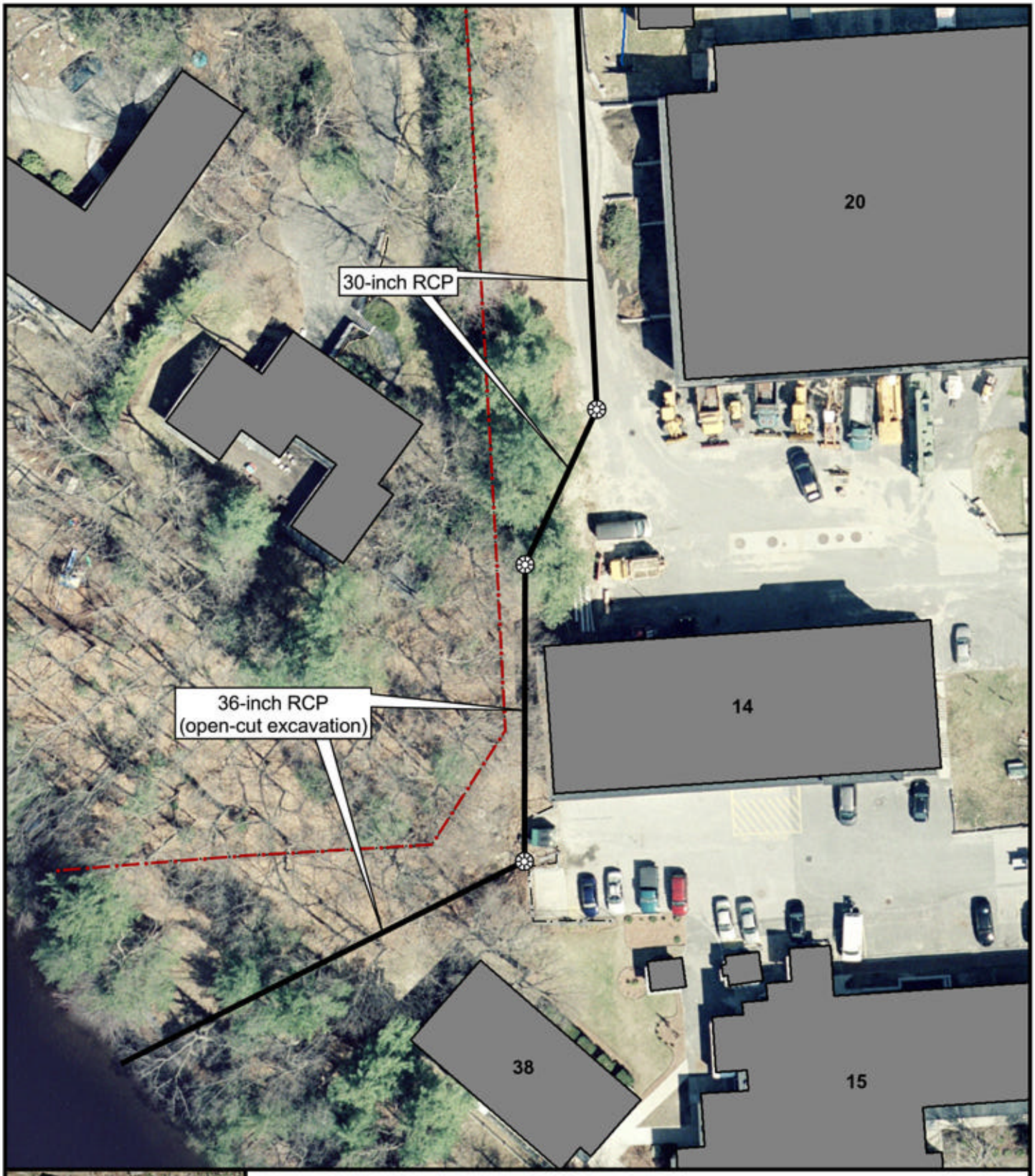

Legend

- Installation Boundary
- Buildings
- Manhole
- RCP - Reinforced Concrete Pipe

N

0 30 60 Feet

Prepared by BRP | Checked by MJS

Figure 2

Environmental Assessment
T-25 Outfall Upgrade and New Oil/Water Separator
Soldier Systems Center
Natick, Massachusetts

Harding ESE
A MACTEC Company

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Legend

- Installation Boundary
- Buildings
- Manhole
- RCP - Reinforced Concrete Pipe

N

0 30 60 Feet

Prepared by BRP | Checked by MJS

Figure 3

Environmental Assessment
T-25 Outfall Upgrade and New Oil/Water Separator
Soldier Systems Center
Natick, Massachusetts

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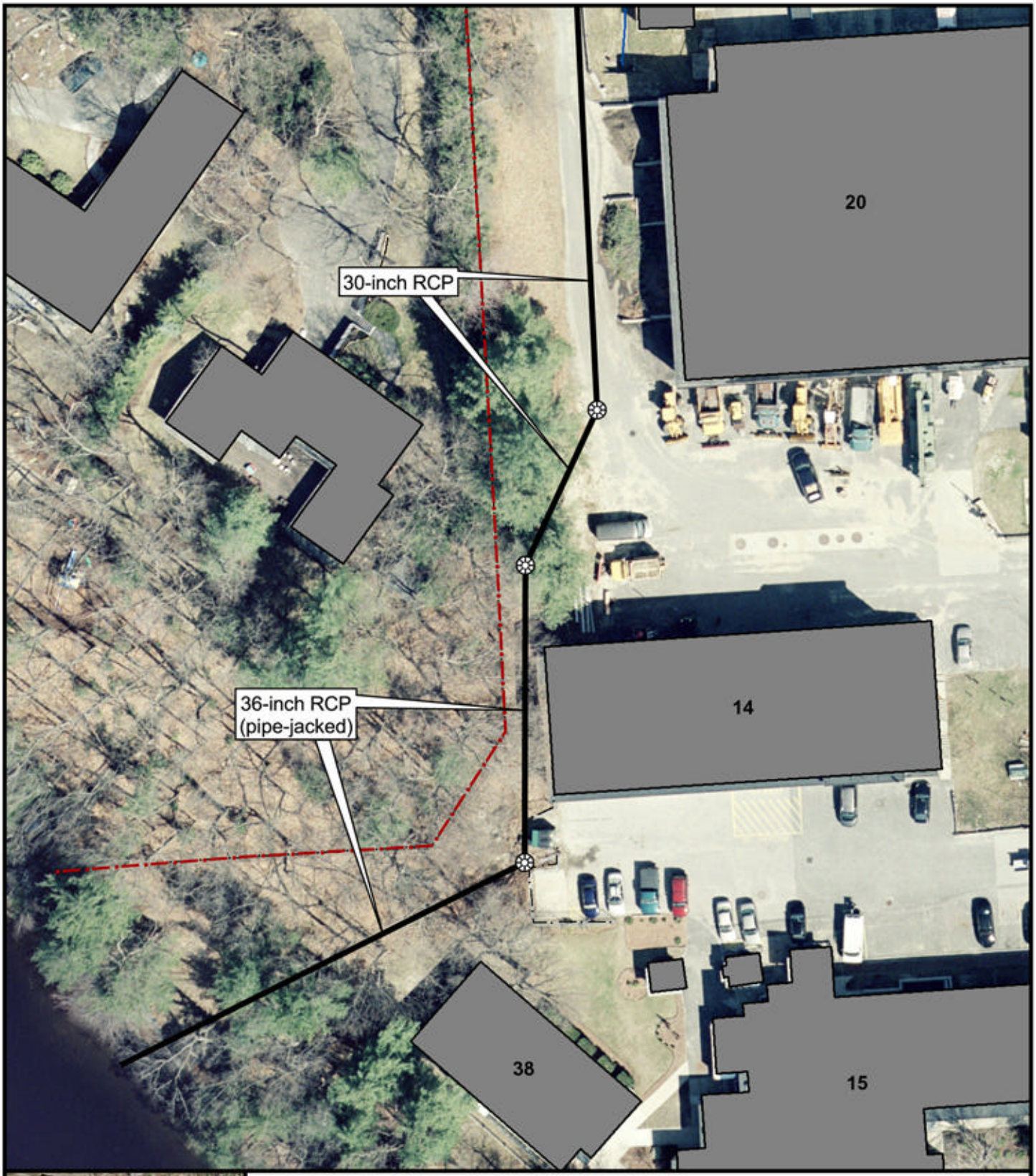

Legend

- Installation Boundary
- Buildings
- Manhole
- RCP - Reinforced Concrete Pipe

N

0 30 60 Feet

Prepared by BRP | Checked by MJS

Figure 4

Environmental Assessment
T-25 Outfall Upgrade and New Oil/Water Separator
Soldier Systems Center
Natick, Massachusetts

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